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A study to evaluate pattern, presentation, clinic-etiologic profile and outcome among patients with trauma to the chest in a tertiary care centre

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Abstract

Background & Methods: The aim of the study is to evaluate pattern, presentation, clinic-etiologic profile and outcome among patients with trauma to the chest. The data showed that young adults, particularly those aged 01-60 years, were most frequently affected by chest trauma, with a notable male predominance. RTAs emerged as the leading cause of injury. Most injuries were blunt trauma, predominantly resulting in rib fractures, while hemothorax and pneumothorax were the most common pleural injuries.

Results: Clinical findings revealed that pain and tenderness over the chest were universally present, affecting all patients (100%). Decreased breath sounds were observed in 36 patients, accounting for 60.0% of the cases. Subcutaneous emphysema was noted in 17 patients, representing 28.3%. Respiratory distress was documented in 20 patients, which is 33.3% of the total. Hypotension was identified in 28 patients, making up 46.7%, while hemoptysis was detected in 11 patients, accounting for 18.3%. These findings illustrate the commonality and distribution of various symptoms among the patient group, providing a comprehensive overview of their clinical presentation.

Conclusion: The outcomes of chest injury patients revealed that the majority (56.7%) were discharged after receiving operative treatment, while 23.3% were discharged following conservative treatment. However, 16.7% of the patients chose to leave against medical advice, and 3.3% succumbed to their injuries. These outcomes underscore the importance of timely and appropriate medical interventions in improving patient prognosis following chest trauma.

Keywords: presentation, clinic-etiologic, outcome, trauma & chest.

Study Design: Observational Study.

Introduction

The incidence of chest injuries has increased due to high speed vehicular traffic, with the improvement in the infrastructure and highways, the automobiles are moving at a higher speed Chest or the thoracic cavity is the central part of the body and thus it is vulnerable to trauma in all other traumatic injuries chest trauma is characterized by life threating conditions due to the vital organs present in it chest lungs, great vessels. Trauma is recognized as a serious health problem in fact it is the leading cause of death and disability in the first four decades of life and the third most common cause of death overall. Millions of people are killed or disabled by injuries each year.

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Currently five of the leading twenty five causes of mortality which are secondary to some form of injury, isolated chest trauma or as a part or polytrauma constitutes about 25% of all cases of trauma thoracic injuries amount for 20-25% of all trauma related deaths and complications of chest trauma contributed to another 25% of all deaths.

Complexities or traumatic thoracic lesions and related respiratory failure causes tremendous morbidity and increases the mortality.

Chest traumas can be due to either blunt or penetrating injuries. Penetrating injuries can be due to stabs, gunshots or blasts and are result of violence and intentional assaults. These penetrating injuries damage the vital structures to cause massive bleeding and affect the oxygen exchange by massive pneumothorax. Blunt chest trauma is caused by vehicular accidents fall from heights, assaults, or other accidents. Blunt injuries due to compression of rib cage which results in various types of thoracic cage trauma ranging from fractures of ribs to flail chest. Chest trauma can present in the form of isolated chest injury or can be a part of poly trauma. Morbidity and mortality after chest trauma depends to a greater extent to the initial management of the victim. Management includes the transportation of victim from the site of trauma and the initial resuscitative measures.

Quick diagnosis and prompt surgical interventions like intercostal drainage for a tension pneumothorax, ventilator support by intubation are lifesaving in many polytrauma patients. Major trauma centers are well equipped with trained staff to deal with polytrauma especially the chest trauma, but smaller centers in our country still need improvement so that many more lives can be saved. Our institute is an advanced trauma care center with state of art equipment and adequately trained staff.

Material and Methods

This observational study was carried out in the Department of General Surgery of Sri Aurobindo Medical College & PG Institute Indore for 01 Year. The observational study was started after approval from the institutional ethics and research committee of the institute. In this study a total of 60 patients of chest trauma were studied. All the patients accordingly to inclusion and exclusion criteria were studied. All the patients were thoroughly examined after recording complete history and the findings were noted on proforma sheet. All the relevant investigations, radiological pathology investigations and procedures/ operation details were noted. All the data was entered on the master chart and tabulated. At no stage of this work the individuals identify was disclosed.

Result

Table No. 1: Age distribution of patients with chest trauma

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Age (in years)	Number of patients (N=60)	Percentage (%)
0-10	2	3.3
11-20	3	5.0
21-30	12	20.0
31-40	13	21.7
41-50	15	25.0
51-60	9	15.0
61 and above	6	10.0

In our study, highest numbers of patients, fifteen patients (25.0%) out of total 60 were aged between 41-50 years, while thirteen patients (21.7%) were between 31-40 years and12 patients (20.0%) belonged to age group 21-30. This shows that the young people are more vulnerable to chest trauma.

Table No. 2: Mechanism of Injury in patients of Chest trauma

Mechanism of Injury	Number of patients (N=60)	Percentage (%)
RTA (Road Traffic Accident)	34	56.7
Fall from height	10	16.7
Assault	7	11.7
Fall from stairs	5	8.3
Railway Accident	2	3.3
Trauma while playing	2	3.3

The commonest mechanism of injury was found to be Road traffic accidentsi.e56.7% (34 cases). Other reasons for chest trauma included fall from height (16.7%, 10 cases), assault (11.7%, 7 cases), Fall from stairs (8.3%, 5 cases), Railway accident (3.3%, 2 cases) and trauma while playing (3.3%, 2 cases), out of the total 60 cases studied.

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Table No. 3: Pleural Injuries in patients of Chest Trauma

Type of Injury	Number of patients	Percentage (%) (N=60)
Hemothorax	14	23.3
Pneumothorax	14	23.3
Hemo- Pneumothorax	11	18.3
Open Pneumothorax	1	1.7
Lung Contusion	9	15.0
Lung Laceration	1	1.7
Hydro- Pneumothorax	4	6.7

The above table describes the pleural injuries showed that hemothorax and pneumothorax were the most common, each affecting 23.3% of patients. Hemopneumothorax followed with 18.3% of the cases. Lung contusions were observed in 15.0% of patients, while hydro-pneumothorax accounted for 6.7%. Less common injuries included open pneumothorax and lung laceration, each present in 1.7% of the patients. These findings highlight the variety of pleural injuries that can result from chest trauma, with a notable prevalence of hemothorax and pneumothorax.

Table No. 4: Clinical findings & symptoms

Clinical Findings	Number of patients (N=60)	Percentage (%)
Pain and tenderness over chest	60	100
Decreased Breath Sounds	36	60.0
Subcutaneous Emphysema	17	28.3
Respiratory distress	20	33.3
Hypotension	28	46.7
Hemoptysis	11	18.3

Clinical findings revealed that pain and tenderness over the chest were universally present, affecting all patients (100%). Decreased breath sounds were observed in 36 patients, accounting for 60.0% of the cases. Subcutaneous emphysema was noted in 17 patients, representing 28.3%. Respiratory distress was documented in 20 patients, which is 33.3% of

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the total. Hypotension was identified in 28 patients, making up 46.7%, while hemoptysis was detected in 11 patients, accounting for 18.3%. These findings illustrate the commonality and distribution of various symptoms among the patient group, providing a comprehensive overview of their clinical presentation.

Table No. 5: Outcome of chest Injury patients

Outcome	Number of patients (N=60)	Percentage (%)
Discharge after conservative treatment	14	23.3
Discharge after operative treatment	34	56.7
Left against medical advice	10	16.7
Death due to injury	2	3.3

The outcomes of chest injury patients revealed that the majority, accounting for 56.7% of cases, were discharged after receiving operative treatment. 23.3% of patients were discharged following conservative treatment. However, a significant portion, comprising 16.7% of cases, chose to leave against medical advice. And, two patients (3.3%) succumbed to their injuries. These outcomes underscore the importance of timely and appropriate medical interventions in improving patient prognosis following chest trauma.

Discussion

Mean age group in our study is similar to that of Ibrahim et al. In a study on chest trauma by S. Dalal et al. half of the patients belonged to 3rd and 4th decade of life, Only two patients out of 60 patients in our study were below the age of 10 years and only six , out of 60 were above the age of 61 years. This shows that chest trauma is not common in extremes of age. Incidence of chest injuries in remarkably low, in very young and very old age groups. S. dalal et al also mentions that the number of very young and very old patients was extremely low in his study of 400 patients of chest injuries. Chest injuries are common in the 3rd and 4the decade of life, as the individuals in this age groups are involved in physical activities and are prone to trauma. In our study of 60 patients 54 (90%) were males only 10% females came with chest trauma.

In our study the most common cause of chest trauma was road traffic accident thirty four out of sixty (56.7%) patients of chest trauma were admitted with history of road traffic accident. This can be attributed to various causes like reckless driving under the influence of alcohol, untrained drivers and not following traffic rules. The second commonest cause was fall from height which accounted for 10 (16.7%) Out of sixty chest trauma due to assault causing blunt or penetrating trauma is a significant cause of chest trauma but in our study the number of victims of assault was only seven out of 60. In a study conducted by Rajashekar Narayan et al in which 1258 patients of chest trauma were studied. Road traffic accident was the

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commonest mechanism of injury in there study which was 75 out 1258. In their study 290 patients of chest trauma came with history of assault i.e. stab injuries, gun short injuries on by heavily objects.

S. Dalal et al reported two hundred and sixty eight (66.66) patients of chest trauma due to road traffic accident. S. Dalal et al had fifty one out of 402 patients of penetrating chest trauma due to assault. The mode of injury with which patient presents to trauma outer depends on area/locality to which it is catering.

Conclusion

Pleural injuries were another critical aspect of the study. Hemothorax and pneumothorax were the most common pleural injuries, each affecting 23.3% of the patients. Hemopneumothorax was observed in 18.3% of the cases, while lung contusions were present in 15.0% of the patients. Hydro-pneumothorax accounted for 6.7% of the cases, and less common injuries included open pneumothorax and lung laceration, each seen in 1.7% of the patients. These findings highlight the variety and severity of pleural injuries resulting from chest trauma.

The outcomes of chest injury patients revealed that the majority (56.7%) were discharged after receiving operative treatment, while 23.3% were discharged following conservative treatment. However, 16.7% of the patients chose to leave against medical advice, and 3.3% succumbed to their injuries. These outcomes underscore the importance of timely and appropriate medical interventions in improving patient prognosis following chest trauma.

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